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NEW YORK, SATURDAY, DECEMBER 11, 1926.

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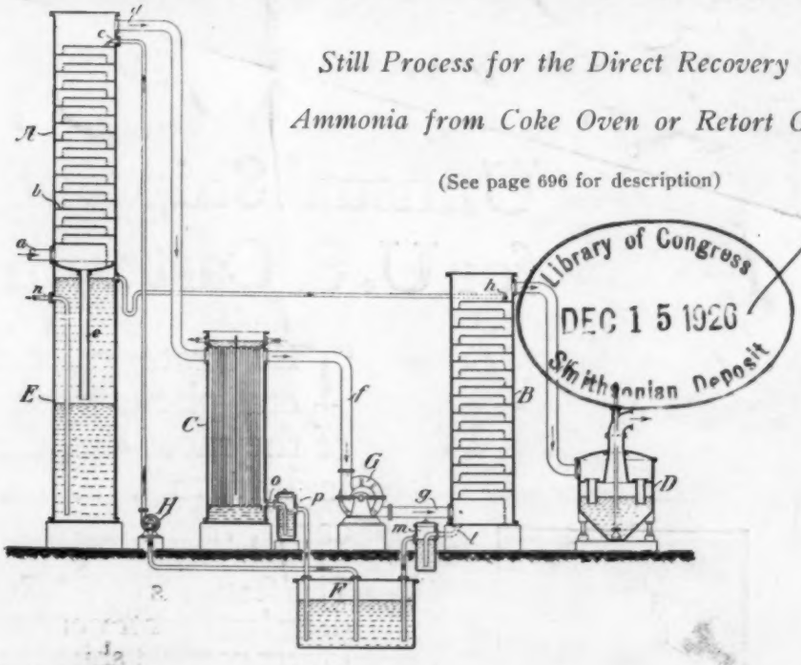
Still Process for the Direct Recovery of
Ammonia from Coke Oven or Retort Gases

(See page 696 for description)



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Advertising Index, page 30

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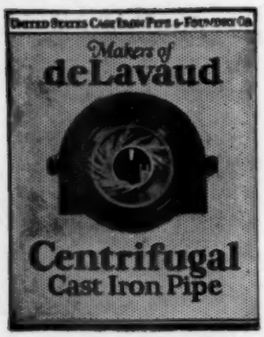

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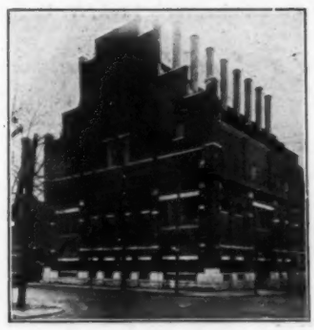

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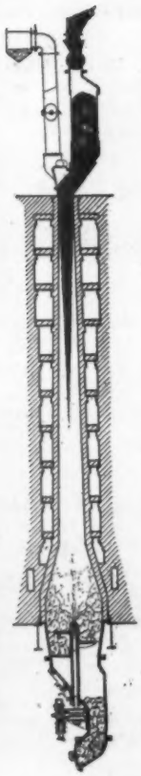

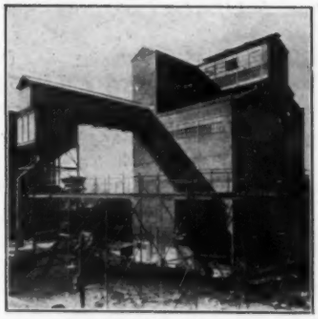

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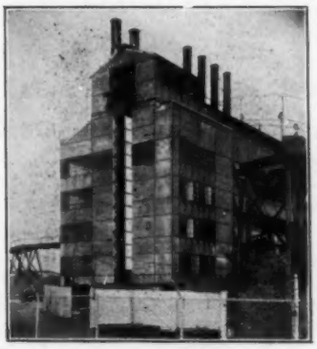

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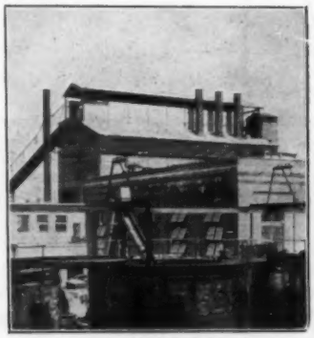

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AMERICAN
GAS JOURNAL

Established 1859— Pioneer of the Gas Industry

Vol. 125. No. 28. NEW YORK, DECEMBER 11, 1926. Whole No. 3610.

The Baltimore Plan of Industrial Education

Prize papers as a means for developing employees

E. B. Luce

Educational Director, Consolidated Gas, Electric Light & Power Co. of Baltimore, Baltimore, Md.

THE prize offers to employees for educational papers put into effect by the Consolidated Gas, Electric Light & Power Company of Baltimore can be adapted to any other organization whether large or small.

The amounts to be awarded for papers, decisions being based upon merit alone, can be fixed at such amounts as the company adopting the scheme may desire. But it is strongly recommended that every paper submitted in good faith and possessing any merit at all as an educational product be given something as a reward for the effort made and as a stimulus for further endeavor. If this is done no paper will be rejected, the author dismissed empty handed, and perhaps discouraged so far as future effort is concerned.

A prize paper offer will supplement other lines of educational work in any organization. Such an offer in effect and participated in by employees will stimulate other activities such as are offered through libraries, outside or inside courses. But the greatest benefit to the organization will be the improvement in operation and service coming through the more careful study and examination of the daily methods, routines and processes.

An Opportunity For All

The plan gives opportunities to all on an individual basis. One does not compete against another. If two papers are prepared on the same subject by two employees working independently, prizes should be awarded to both. The prizes awarded may not be for like amounts because one paper would, in all probability, be more meritorious than the other. If two departmental manuals are prepared by two persons or two groups working independently, two prizes should be given. In such a situation the end sought is more nearly attained because more employees have advanced in the understanding of the responsibilities, duties, functions, and relationships of the department. As a result they are worth more to the company that they serve.

Being on an individual basis the prize paper plan opens an opportunity to all. The employee who can not attend courses or meetings, or who cannot utilize other facilities for educational improvement may study and reflect upon the subject of his choice within the field of his interest and knowlege to the same end, namely, mental growth, and finally, he can place the results of his study and effort in tangible form and be rewarded. This is as much an encouragement to him and recognition of his achievement as it is to give a prize for the successful completion of an outside course or to make a refund of tuition.

Gap Between School and Industry Bridged

The prize paper method has the advantage over work done in outside courses in that the study and reflection of the employee are directly upon the work of the company which employs him. The isolation gap between industry and school is bridged and the employee's entire effort will count more directly toward his own promotion and the improved service and efficiency of his company.

The benefit to the organization is worth the cost. With this method in vogue in a company, with suitable stimulation and direction, e.g., many manuals can be prepared simultaneously. These may be service, operation, or general manuals.

To employ a staff of competent employees to carry through a project of this magnitude would cost in salaries alone a sum far greater than any amount that will ever be awarded in prizes. For example, if thirty departmental manuals were prepared through the prize paper method and each was awarded $50.00

the entire cost would be $1,500. This amount would not pay the salary of a codifier who might be engaged to do such work for a period of six months. In relation to manuals it may be noted also that the prize paper method brings those into the project who are closest to the work, who have access to the necessary information, and are responsible more or less for the work the department has to do. This method avoids the interference of an outsider coming in who knows practically nothing about the work who first has to learn it before he can formulate

G. S. Colburn
(Paper on Architects' Service Bureau)

procedures. Even if a manual is prepared by an outsider who might be called a codifier, the department personnel would need to bear the additional burden of instructing him. The benefit to the employees themselves would not be so direct and beneficial as when the direct responsibility is assumed by them and the cost to the company would be much greater.

Details of the Baltimore Plan

The plan of prize papers put into effect in the Consolidated Gas, Electric Light & Power Company of Baltimore on July 1, 1926, with slight changes for publication is as follows:

1. An educational prize in cash will be given to any employee who prepares a paper of worth and merit on one of the subjects listed below or any other subject pertinent to the operations of the company. According to the degree of worth and merit, a prize of $50.00, $25.00, $10.00, $5.00, or $1.00 will be awarded. If a paper is considered to warrant more than $50.00, a more substantial prize may be awarded. A paper submitted which has no worth or merit will not be given a prize. Otherwise every paper submitted will receive at least the minimum prize. The content or ideas of worth, rather than literary style, will be of first importance in grading papers submitted. Effectiveness, clearness and scope are important.

2. Papers should be concise, well arranged, containing a minimum of words. They should be typewritten or written in legible manner on white paper, size 8½ inches by 11 inches using one side only. In case the employee has no facilities for typing he can arrange with some one in the company to have the typing done. All papers must be signed by the author whose name will be known to the judges and those to whom the paper may be referred for consideration. Papers should be submitted to the educational director or such other person as may be designated.

3. Careful planning ought to precede the preparation of papers. A topical outline should be the first step. Helps in planning may be secured from the available sources of the company such as the educational department, the library, and other departments. Any available sources of material may be used but the final paper should be the work of the employee or the employees who submit it. Two employees may work together in preparing a paper and share in the prize awarded.

No Competition

4. There will be no competition. All papers will be considered on an individual basis, according to the merit of the paper from the standpoint of company activities. Papers will be graded and prizes awarded promptly. Members of the company's educational and training committee will be the judges. Any committee suitable to the organization can be appointed to judge the papers.

5. Papers awarded prizes may be placed on exhibition in the library or on the bulletin boards of the company; those of sufficient importance as company

D. C. Bruce

information and furnishing suitable subject matter may be published as manuals or reports and issued

in suitable form for distribution. The company reserves the right to edit before publication.

6. Manuals, reports, or other papers prepared by employees in the course of their regular work assignments should not be submitted for company educational prizes. Those who submit papers for company prizes should select the particular offer, if the company has more than one offer, under which the papers are to be considered. Papers previously submitted under any company offer for a prize are not eligible hereunder. Papers should not be submitted for two prizes within the company, but may be submitted for one company prize and for a prize offered by an outside organization.

H. L. Gruehn
(Paper on Opportunity for the Accountant)

7. The educational department, or other designated department, a person or a committee, will co-operate with the author in entering especially meritorious papers in outside competitions for which they are eligible.

Subjects Suggested for Prize Papers

1. Departmental manuals of procedure. The maximum prize will be given if a departmental manual is approved and accepted as the master record and guide for a department. Other manuals suggested:

(a) Building Service Manual.
(b) Telephone Manual.
(c) Public Service Manual.
(d) General Safety Manual.
(e) Office Boy's Manual.

2. Definite and practical plans for increasing the domestic consumption of gas per customer.

3. A line of gas water heaters to meet various requirements; specifications and description.

4. Recommendations for standardized construction practices for either the gas or the electric division of the company, which are acceptable for operating practice.

5. Suggested changes in departments, methods and functions in the interest of Better Public Service.

6. Training new employees, showing methods, objects and results to be attained.

7. The methods of electric or gas distribution in our expanding territory specially with a view to economy.

Sales Methods

8. Sales methods of the company and how advanced.

9. What the company does for its employees; the results; together with recommendations for closer co-operation.

10. New and desirable uses for gas; how to establish them and expected results.

11. The principles of purchasing and storing in a large Public Utility.

12. Methods for preparing a report; covering analyses, sources, comparisons and form.

13. The means and possibilities for self-development, and the chance for ultimate success of a Junior in the company. (Open only for Juniors.)

14. What may the company do beyond the manufacture, distribution and sale of gas, electricity and the sales of merchandise and stock, giving supporting evidence and reasons.

15. The relationship of cheap power to the growth of the city and the country.

16. How we proceed to insure a greater city.

17. The projected possibilities of the company for the next decade ending in 1936, based on the growth of the company's business in the last ten years.

N. E. L. A. Prizes

18. National Electric Light Association and company prizes. Papers on subjects relating to:

(a) The Central Station Industry. (The Doherty Prize, a gold medal, and the Harriet Billings Prize of $50).

(b) "Increasing the Usefulness of the Accountant to the Public Utility Industry." ($250 for first, $150 for second and $100 for third, donated by the H. M. Byllesby Company).

(c) "Public Relations." ($250 offered by Mr. Martin W. Insull).

(d) Any Central Station commercial subject. ($250 offered by Mr. Arthur Williams).

(e) Any Central Station technical subject. ($250 for first, $150 for second and $100 for third, offered by Mr. James H. McGraw).

The Dehydration of Gas

V. Use of adsorbents, costs and other features

F. W. Sperr, Jr.

BY adsorbents we mean solid substances that have the property of condensing vapors through so-called surface action. Such substances are characterized by ultra microscopic porosity and a high ratio of surface to volume. For example, it has been stated that a 1-gram cube of silica gel exposes an internal surface of approximately 5,000 square feet. Silica gel is the only material of this class that has been commercially employed for drying air. A number of air drying plants have been installed by The Silica Gel Corporation and it is understood that apparatus of this type has been recently erected in connection with a blast furnace in England.[21] For information on this application of silica gel, reference should be made to an excellent article on Methods of Air Drying by Edwin C. Holden.[22] Since this article was written, special determinations of vapor pressure are said to have confirmed the statement that active gel has an equilibrium tension between that of concentrated sulphuric acid and P_2O_5.

Use of Silica Gel

The British dry blast plant employs stationary beds of silica gel arranged as shown in Figure 20. The gel is reactivated by means of hot air and steam. The following is quoted from the article above mentioned:

"The gel ratio depends upon the humidity of the inlet air, the temperature of the operation and the dryness required. Thus with a ratio of 0.75 lb. of gel per 100 cubic feet of air, the following results are obtained at the respective outlet temperatures given using the type C gel:

Outlet Temp. Degrees F.	Per Cent of Total Moisture Removed
80	92.6
85	86.6
90	82.0
95	78.6
100	75.5
105	72.9

"The per cent adsorption can be controlled by varying the gel ratio, or by the use of cooling coils to lower the outlet temperature.

"The power and heat required to perform the operation vary with the duty required. In a large installation the gross requirements for each 1,000 cubic feet per minute flow are between 70 and 90 kw-hr. and 3 to 5,500,000 B.t.u. per 24 hours, depending upon the original atmospheric humidity and the final dryness required."

Certain Details Must Be Worked Out

In the application of silica gel to the dehydration of manufactured gas certain special problems would have to be worked out. The material is a very active adsorbent for the benzols and in fact has been used for the recovery of benzols from coke oven gas. It has, however, been shown that in the treatment of moist gas containing benzol, the latter is adsorbed by the silica gel in the initial stages but later is gradually displaced by water until finally no benzol remains in the gel.[23] It is stated that in operation most of the adsorbable illuminants will be displaced by the moisture and returned to the gas, and the remainder will be recovered from the condenser by steam activation and can be returned to the gas by sprays.

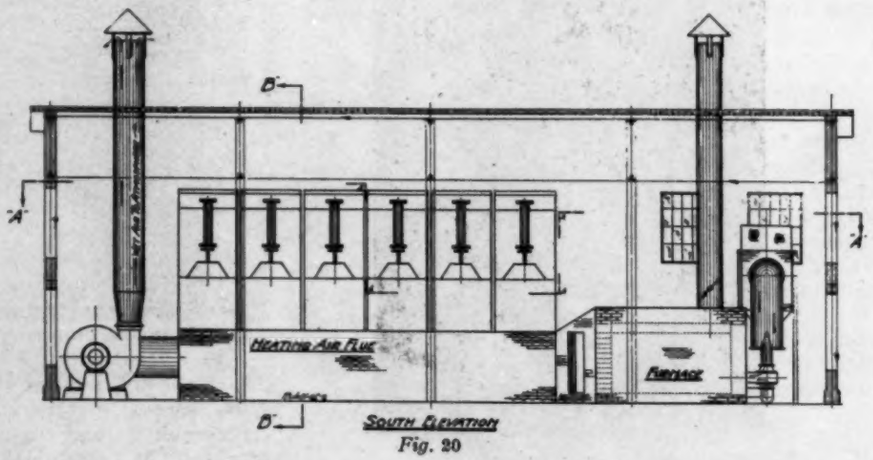

Fig. 20

Precautions must be taken in the activation to avoid mixing of gas and air. It is understood that this can be accomplished by the proper use of steam. In the adsorption of water by silica gel, the heat of condensation is liberated, but it is considered unnecessary to employ any special cooling means to take care of this.

The Silica Gel Corporation has kindly communicated the following information on a specific problem submitted by the writer:

---

[21] Silica Gel Air Drying Process for Blast Furnaces, Iron and Coal Trades Review, July 24, 1926, p. 129.

[22] E. C. Holden, Methods of Air Drying, Chem. and Met. Eng., May 7, 1923, p. 801.

[23] E. C. Williams, Silica Gel as an Industrial Adsorbent, Paper read at a meeting of the Chemical Engineering Group of the Soc. of Chem. Ind., Mar. 7, 1924.

Details on Specific Problem

"The specific problem you presented was the drying of manufactured gas saturated at 80 degrees F. so that the effluent gas will be saturated equivalent to or below 30 degrees F. dew point.

"We presume the gas to be treated will be tar free and will consist of a mixture of coke oven and water gas of the following composition:

Composition	%	Sp. Gr.	Sp. Ht.	B.t.u C.F.
CO_2	4.0	1.529	.1843	——
Illuminants	10.0	.978	.40	1800
O_2	0.5	1.028	.2175	——
CO	20.0	.963	.2425	323
CH_4	20.0	.554	.593	1009
H_2	35.0	.070	3.40	326
N_2	10.5	.933	.244	——
W't'd avg. for	100.0	.59	.27	560.5

"Saturation at 80 degrees F. is equivalent to 10.93 grains per cu. ft.

"Saturation at 30 degrees F. is equivalent to 1.94 grains per cu. ft.

"The volume, however, at 30 degrees F. is contracted to 90.7 per cent, so that the gas at 80 degrees F. must be dried to 1.76 grains per cu. ft., making a total removal of 9.7 grains. This calls for an efficiency of 84 per cent.

"We should recommend for this service a battery of adsorbers of our multiple bed type, the general design of which is shown in photostat copy of drawing No. 1331-A-4 attached (Figure 20).

"For a 4,000,000 cu. ft. per 24 hour gas plant having a maximum flow of about 5,000 c.f.m. the silica gel installation would consist of 4 adsorbers each with 4 beds, and each bed approximately 4 ft. x 8 ft. This would require a total of about 20,000 lb. of granular silica gel. The 4 adsorbers with their inlet and outlet connections to burners for activation purposes, and all accessories, will occupy an area of about 25x50 ft. and a height of approximately 12 ft. exclusive of the stack for exit combustion gases.

"In connection with the operation, a fuel consumption of 12,500 B.t.u. per minute would be required and power for a resistance of about 6 inches of water column through the silica gel unit.

"Part time of one man for changing valves to cut in and out of adsorbers is the only labor item involved."

Probable Cost and Economy of Dehydration

It has been shown that there are a large number of possible methods for the dehydration of manufactured gas. In the present state of the art, it would certainly be impractible to undertake any comparison of the cost of these various methods. It is understood that the operating cost for the drying of blast furnace air by the Gayley Process was less than 0.1 cent per thousand cubic feet of air. Mr. Bruce Walter[20] estimated the operating cost of his process at 4¼ cents per ton of pig iron which would be equivalent to approximately 0.035 cent per thousand cubic feet of air. This estimate was for a plant handling 40,000 cubic feet of air per minute and the installation cost of such a plant was estimated to be $92,800. On this basis, the fixed charges at 15% would be equivalent to approximately 0.16 cent per thousand cubic feet of air, making a total cost of about 0.2 cent per thousand cubic feet of gas. These, however, are pre-war figures.

Several Feasible Methods

It is sufficient for the present purposes to state that there are several methods which can probably be applied at a cost not exceeding 1 cent per thousand cubic feet of gas, including fixed charges. On account of the nature of the equipment and the low labor factor involved, the cost of dehydration to the small gas company per thousand cubic feet of gas would not be greatly increased. On the other hand, the probable saving per thousand cubic feet would probably be much greater for the small company than for the large company because the expense due to meter and service troubles, stoppage complaints, attention to drips, etc., always bears more heavily on the former than on the latter.

The writer believes that in a system of medium size, the direct net financial saving due to hydration might be in the neighborhood of 2 cents per thousand

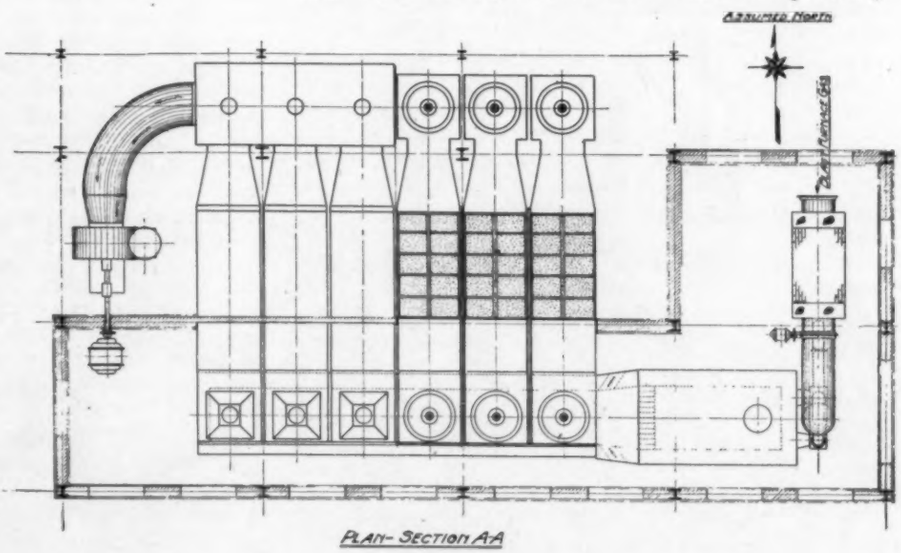

Fig. 20-A

cubic feet and in a small system it might be much greater. This is taking into account actual book charges for complaints, meter repairs, drip pumping, etc. The indirect value of dehydration on account of better service and greater advantage from the standpoint of competition against other fuels and against electricity would certainly be greater.

Possible Disadvantages of Dehydration

In addition to the matter of cost, a few possible disadvantages that might attend the distribution of dehydrated gas have been suggested:

1. The question has been raised whether the distribution of dry gas would involve scrapping the water sealed holder. It is true that an ideal system would employ the waterless type of holder and conversely dehydrated gas would have the advantage of eliminating any frosting difficulties with this type of holder. The amount of moisture that would be picked up by dehydrated gas in a system of this type would be negligible.

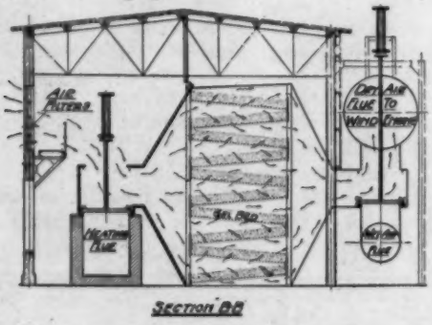

Fig. 20-B

2. Dehydration might increase the amount of leakage in the distribution system on account of drying out of material in pipe joints and on account of opening of small leaks normally sealed with moist material. The writer is advised that the records of some companies which have changed from manufactured gas to dry natural gas do not substantiate this theory, while others have noted some increased leakage. The trouble would be largely overcome by adopting a system of oil lubrication.

3. It is possible that in changing a system from saturated gas to dry gas any deposits in the system will tend either to harden or else to take the form of fine dust and be carried along with the gas. This disadvantage would disappear if the system were kept lubricated with oil and in any event would disappear in time. The eventual condition should be quite the same as normally exists in a natural gas system.

Desirability of Lubrication

In the accumulation of material for the preparation of this paper, the writer has been greatly impressed with the importance of oil in retarding corrosion and with the lack of such protection in modern practice. It is strongly recommended that the injection of a suitable petroleum oil as fog or vapor be adopted by all gas companies that produce gas of such quality that no condensation occurs in the distribution system. It is believed that the oil fog system of lubrication is to be preferred because such a fog if properly made will carry to all parts of the system and afford very effective protection, while with a vapor system there are apt to be irregularities of deposition due to intermediate cooling and reheating of the gas as it travels through the system so that parts of the system may not receive sufficient lubrication.

Oil Fog Lubrication

The injection of oil fog was first employed to alleviate naphthalene troubles and has been found definitely advantageous in British practice to protect meters from corrosion. In one system gas oil is used having a specific gravity of 0.85 to 0.87 and a boiling point of 220 degrees C. to 395 degrees C. With a suitable oil, a consumption of as little as 3 to 5 gallons per million cubic feet should be sufficient, so that the expense involved is insignificant.[24]

The practice of oil fog lubrication should certainly be adopted as a partial protection against corrosion in the distribution of moist gas. It should be continued, however, even after installation of dehydration equipment. The amount of oil required for lubrication of a dry gas system should be even smaller than the figures mentioned above, because such oil would not be continually removed by the condensed moistures. The oil would prevent any difficulties due to dust formation, and will tend to seal minute openings in joints or elsewhere that might otherwise permit some loss of gas. Finally it should obviate any risk of iron carbonyl formation that appears to exist, especially in compressed gas systems where carbon monoxide is brought into contact with unprotected metal.[25]

Acknowledgments

Most of the calculations and graphs in this paper have been prepared by Mr. W. J. Klaiber of the Koppers Company Laboratories, and the writer desires to express his appreciation of this indispensable work and of the assistance rendered by several other members of our organization. The writer is also indebted to the Carrier Engineering Corporation, and to the Silica Gel Corporation for their courtesy in supplying information; and to Mr. W. C. Beckjord, vice-president, and Mr. D. A. Powell, engineer, of the American Light and Traction Company, for their co-operation and valuable suggestions made in connection with the preparation of this paper.

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[24] B. R. Parkinson, Oil Fog Lubrication, The Gas World, Dec. 7, 1918, p. 346; see also J. G. Taplay, The Gas World, Oct. 19, 1918, p. 213; Gas Jour., June 3, 1919, p. 569.

[25] H. Bunte and E. Terres, Iron Carbonyl in Coal Gas under High Pressure, Gas Jour., Mar. 22, 1922, p. 706; see also Iron Carbonyls: Their Physical and Chemical Properties, by A. C. Fieldner and G. W. Jones, A. G. A. Monthly, July, 1924, p. 439.

Selling Heating Satisfaction

Actual examples of making gas boiler sales are cited

Wm. E. Curtin

Pawtucket Gas Company

"CONVENIENCE is a better salesman today than economy ever was." Thus in its national advertising copy a short time ago a well known boiler manufacturer stated the all powerful appeal of gas house heating.

Convenience is the greatest and most effective appeal of the gas fired boiler for house heating but not the only appeal and the salesman who knows only that gas house heating is convenient is not likely to meet with the greatest success. The Alpha and Omega of all successful selling may be condensed into two simple rules and these rules must be followed to win the success in selling "heating satisfaction." These rules are:

1. Know your product.
2. Know your prospect.

Consider these rules carefully and the necessity of their observance becomes obvious. All will readily concede the importance of rule number one. No man can win complete and permanent success in selling a product he does not know from every angle and on which he has not thoroughly sold himself.

A Fascinating Subject

As you study the subject of selling "heating satisfaction," you will notice that the more you learn of the principles of heating the more you want to know. The subject has a real fascination. This being the case, it naturally follows that your prospect will have this reaction to an even greater degree. He is the fellow from whom you are endeavoring to separate a sizeable number of good American dollars. He is the fellow to whom a greater knowlege of the principles of heating means greater comfort or greater economy, perhaps both.

Knowing the product leads to enthusiasm, the first requisite of a successful salesman of "heating satisfaction," for enthusiasm like laughter and the measles is highly contagious. The more of it a salesman has the more certain he is to infect his prospect, and when the prospect once gets enthusiastic, he is lost. His only cure is to sign on the dotted line.

Selling "heating satisfaction" requires sales effort of a highly specialized order and is more of a psychological nature than ordinary industrial selling. The same argument that cause a man to use gas in his factory may not work so well in selling him house heating. It is even more necessary to win his confidence and learn as much as possible about him and his ways in order to give him heating satisfaction than it is to know his manufacturing requirements when selling him industrial gas.

It is here where rule number two applies. A knowledge of your prospect's characteristics, habits and mode of living will often enable you to select unerringly the one advantage of your proposition which will appeal to him more than any other. To illustrate the truth of this statement suppose we get right down to cases.

An Instructive Example

Consider the case of Mr. Edwin Wardell, for example. He is the superintendent of a Worsted Spinning Mill and a close friend of several of our company officials. His home, a well constructed frame building of nine rooms, with baths and hallways, was twenty-eight years old when he decided to replace his original heating plant. This plant was a round type coal burning boiler manufactured by the Wm. H. Page Co., of Norwich, Connecticut, and was considered the best available heating plant a quarter of a century ago.

Learning that Mr. Wardell was a likely prospect for a gas-fired boiler the first step of our engineer was to improve his acquaintance. This work began at the Chamber of Commerce of which both were members.

Our engineer sat in the same bridge games with Mr. Wardell, played billiards with him (though expert billiard playing is not essential to selling "heating satisfaction") and chatted on many subjects, never, however, mentioning the house heating plant. What he was really doing was exploring for the most effective selling argument.

We learned from these contacts that Mr. Wardell took particular pride in the equipment of his home, and in its appearance. He was a handy man and did many odd jobs around the house to keep it looking spick and span. From the little things we observed about him we conclude that here was a man to whom the fact that the equipment we were trying to sell him would be the first in the city would act as an incentive rather than an obstacle to the sale. In that way we avoided the difficulties usually attached to closing the first sale.

Knowing Prospect Sold Heater

The reason is clear. We know our prospect. Knowing him as we did it was merely a matter of picturing to Mr. Wardell the warm, pleasant evenings at home without a thought of coal or the drafts to get his signature on the dotted line and start the gas house heating ball rolling in his town.

This installation number one was sold in April 1923. It gave absolute satisfaction from the start in spite of higher operating costs than were estimated.

Mr. Wardell now uses the space formerly occupied by his coal bin for a billiard room. The sales argument here was convenience.

The next case on our list is that of Dr. Handley. He was a well known physician residing in a 12 room house not more than a stone's throw from Mr. Wardell. His heating plant was of a well known make and but a year old.

Interesting the Doctor

The doctor learned that Mr. Wardell had ordered a gas-fired boiler and we learned the doctor was interested. Knowing the importance attached to evenness of temperature and absence of drafts by doctors in general and by our prospect in particular, we went into the details of the operation of a heating plant which would forever banish from his house the fickleness of New England weather. The idea worked and his name went on the dotted line making the second installation sold, and the time May, 1923.

Gas Heated Office Building in Pawtucket, R. I.

The satisfaction was as complete as in the case of Mr. Wardell. Dr. Handley's basement is now used by his daughter for a chemical laboratory. In this case because we knew our prospect we talked comfort.

Now comes the case of Mr. H. E. Mitchell who we learned was in a quandary over his heating problems. So we decided it was time to get busy. These are the facts we discovered.

A Peculiar Occurrence

One evening in April, while Mrs. Mitchell was entertaining a number of ladies, a shower of soot was sprayed from the heater pipes all over the rooms, the furniture and guests. The reason for this soot tornado was and still is unknown. The heating plant consisted of a high grade oil burner operating in a hot air furnace which was manufactured in Mr. Mitchell's own sheet metal plant.

On several previous occasions light smatterings of soot had been found in the house and after the deluge, Mrs. Mitchell declared she had had enough. Hence Mr. Mitchell's dilemma. Reluctantly he ordered his own furnace removed.

We described to him the spotless condition of those homes in other cities which were heated with gas. When his new hot water heating system was completed it was a gas fired boiler that supplied the heat. This, the third installation, was sold in May, 1923.

It gave entire satisfaction and showed somewhat better economy than the earlier installations. Of course the most effective argument used in this case was cleanliness.

Ease of Operation Proves Successful Argument

Case number four brings us to Mr. Edmund Liffin.

In May, 1923, Mr. Liffin moved into a large comfortable residence he had just purchased from the former owner. It contains twenty-two rooms and is one of the finest residences in the city.

It was our knowlege of the prospect rather than of his residence, however, which finally turned the trick. We learned that Mrs. Liffin was learning to drive an automobile. That meant the family chauffeur would soon have a very easy time. But in addition to driving the car this gentleman also acted as nurse maid to the big coal fired Page Boiler which occupied the space of a good sized room in the basement of the residence. This was the cue for our engineer to appear on the scene of action.

We described to Mr. Liffin how he could get the full benefit from his excellent heating system and add to it such simplicity of operation that no attention whatever would be necessary. Four things happened.

What Happened

First: Mr. Liffin bought a gas-fired boiler. Second: Mrs. Liffin began driving her own car and liked the job. Third: Young Master Liffin age 12 became engineer in charge of the heating plant. His sole responsibility is to wind the thermostat clock every Saturday morning. Fourth: The chauffeur got fired and Mr. Liffin saved his salary.

As can be seen a real economy resulted in the case of this installation because of the salary which no

longer had to be paid. In the case of this installation number four which was sold in July, 1923, however, Mr. Liffin was impressed most when he was told about the ease of control. He was in the market for a heating plant no harder to operate than an automobile.

Don't get the impression because these first installations were in large houses that only the owners of mansions installed gas-fired boilers. For example consider the case of Miss Isabel Green, a lady of whom we may speak as being of mature years and who lives with her sister in the upper flat of what is commonly called a "duplex" apartment house.

There are five rooms and when we first learned that Miss Green was to occupy the apartment she was living at a hotel, the apartment then being under construction. Realizing there would be no man in the house to take care of the heating plant we felt our job was somewhat simpler than in many cases.

We merely enumerated the advantages of convenience, comfort, cleanliness and control. Miss Green ordered "heating satisfaction," and she has had it for two years. We are not quite sure yet which one of these sales arguments made the strongest appeal, but we are inclined to the belief it was all of them in combination.

Full Attention to First Customers Paid

Now let us go back and see how well it paid to give all that attention to the first customer. Mr. Harry Pullman who is a next door neighbor of Mr. Wardell and whose house is an exact duplicate of Mr. Wardell's in size and exterior appearance came under the all powerful influence of the sizzling enthusiasm of the man who was the first in town to install a gas-fired boiler for house heating. Mr. Pullman's name went on the order blank because our engineer had made such a good house heating salesman of Mr. Wardell, had imparted his own enthusiasm to him. We did not sell Mr. Pullman. It was Mr. Wardell who did. Every customer who is imbued with the enthusiasm the salesman should be able to impart can be counted upon to sell house heating plants to others. The element of "Keeping up with the Joneses" helps in this case if the right kind of judgment has been displayed in making the first sales.

Two Broad Classes of Prospects

With regard to heating systems, our prospects will be divided, broadly speaking into two classes—those who know little or nothing about their heating plants and those who know all about them. The questions which will be asked by those in the first class will be simple, sometimes bordering on the foolish. The questions which the others ask will be stickers. You must be prepared to answer them all, which means that you must know your product from A to Z.

You must learn as much as you can of the intimate details of every case, because oftentimes it is some small and relatively unimportant detail which furnishes you your best working lead. It is often the little thing that means the making or the losing of a sale.

On the asset side of the ledger you have convenience, comfort, cleanliness and control, to say nothing of safety, reliability, certainty of fuel supply without fluctuations in price, combination of any of these, or circumstances applying in a particular case.

Only Cost on Opposite Side

On the opposite side you have only cost. It does cost more money to obtain "Heating Satisfaction" through the use of gas than the amount of the coal bill. But a Packard to say nothing of a Rolls-Royce costs more than a flivver. The point is, it is worth more.

Our job is to balance up the different factors in order to close the sale and if we know our prospect and our product we will tackle the proposition in an intelligent manner. Then it should not prove a very difficult job.

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Give a Gas Appliance Gift
"Merry Christmas" to Mother
IF it's said with a shining new white enamel gas range it will bring her a message of cheer every day in the year. A pleasant surprise on Christmas morning is doubly thoughtful if it's renewed every morning with help in the cooking and more leisure through the day.
Give her an up-to-date
Gas Range
—the gift of daily help.
(Your Name and Address)
"If it's done with heat— you can do it better with Gas"
A.G.A.475

Advertising the Range in the Christmas Spirit

The Gas Business of the Future*

What will be the ultimate gas process and form of gas organization

W. A. Baehr

Vice-President Illinois Power and Light Corporation

GENERALLY speaking, the gas business has great future possibilities. If we look only at the cost of one million heat units, say, in the form of gas where gas is used for manufacturing industrial products, the cost of gas fuel as compared to coal or oil is seemingly high. There are, of course, many other factors which enter into the problem besides the mere comparison of cost of one million B.t.u. in the form of gas against one million B.t.u. in the form of other fuel, and these will be discussed by the other speakers.

I want to call your attention to the possible and probable developments of gas manufacture. In the first place, the calorific value of the gas we manufacture is a determining factor in the process we choose. Nowadays one hears more about the probability of future gas being of low calorific value than we are now developing. However, I have often thought that we may be overlooking an important item if we think of the future development only in the light of low calorific value gas. You all know about methane, or marsh gas as it is called, chemically known as CH_4, which is a high B.t.u. gas—namely, approximately 1,000 B.t.u. Methane consists simply of carbon and hydrogen, will stand high compression, and is a fine, high-grade, dependable gas, and it might very well be that the ultimate development of the proper gas to distribute would be such a gas as methane, which is a high calorific gas, rather than a low calorific gas such as a mixture of coal gas and uncarburetted water gas.

Too Much for One Man

When it comes to the application of gas to the needs of the industry, it would be impossible for a salesman with even fifty years of experience to be able to solve all the problems that remain to be solved and must be solved, if the gas industry is to be successful. The field is enormous; highly remunerative and of very absorbing interest.

Economic Factors

One hundred years ago, or, to be more exact, one hundred and twenty-five years ago, when gas was first brought into commercial use, the manufacturing and the application of gas was very crude. Later on there came different processes, different kinds of gas and different equipment, but the real thing is just starting today. We must now learn how to sell gas. We have learned something about its manufacture and about its possibilities. We have made many discoveries and studied the question of its application, and yet we have only begun. Today the complete uses of gas in the home offer the solution stitutes an elimination of drudgery. These are the of a great problem. The use of it in cooking, water heating, refrigeration, and heating of the home, conthings we have to deal with today. In order to accomplish the results in the selling of gas for these purposes, we have to learn to become salesmen; sales engineers. We must learn, not only how to make our product and deliver it, but we must learn how to sell it. The business that does not consider its selling department the most important part of the business, is not what it should be in the modern world. If you want to get to "home plate" in the gas game, you must learn to sell, and until you do this, you are not going to hold your place in the procession. Your success in the industrial department depends upon the sales you make. Salesmen selling industrial gas require technical knowledge as well as a knowledge of the principles of salesmanship.

Sales Arguments

I do not believe that the selling of gas as a fuel is going to be based only on its value as a fuel. What people look to first is the cost of the gas, only its B.t.u. value into consideration. The thing that is going to sell gas to the industrial world is not low cost of gas but the total cost of the finished industrial article. It is difficult for us to solve these problems. How many of you would consider including in the final cost of a finished product the advantages derived from gas, such as, for instance, the elimination of smoke from a chimney. With gas, there is no smoke, and if you can make a person see the advantages of clean fuel, to such an extent that you can make him forget the high cost, you will be unconsciously reducing the seemingly high cost of that gas.

Jack of All Trades—Master of None

I have seen men who went through life trying to find what they were most fitted for and never did anything but jump from one thing to another. When you go into engineering work or sales work, or into developing yourself along business lines, there is no doubt that it is most important to know the line of work for which you are most suited.

Years ago some men conceived the idea from a business standpoint that it would be well to combine the gas and the electric light business in a certain city. Neither the gas business nor the electric business in that place were very far advanced. They were competitors in some lines. It was felt that by combining the properties such competition as existed would be eliminated, or at least very much limited, and certain economies would be effected, and I think, generally speaking, that this

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*Delivered at short course in industrial gas engineering, University of Illinois.

proved true not only in that instance but in numerous other instances where the gas and the electric business were combined.

Gas At Times Suffers in Combination

It has been my experience, based on observation of many companies in pretty nearly all parts of the United States, that where gas and electric business, and possibly street railway and other departments, are combined into one company, some one department will suffer somewhat from lack of attention. It has been clearly demonstrated in many instances that the gas department has suffered because the electric business was apparently more attractive to the management and kept it fully occupied. In other words, the electric department was developing rapidly, presented numerous problems, required the investment of a great amount of capital, and, as a result, received the maximum amount of attention, not only from the management but from practically the entire organization.

It is my opinion that in many instances the gas business would have made much more rapid progress if it had not been combined with the electric business. But, at any rate, the result of such combinations today is that the gas business has to overcome an accumulated handicap which has not allowed it to develop to the point which it should have attained at this time.

The Wisdom of Gas-Electric Combination

It may be that in the future the wisdom of combining the gas and electric industries will again become questioned more generally, and it certainly will be unless the management of the big combination companies gives proper attention to the development of each department and does not place all its efforts, or at least its major efforts, in one department of the business to the exclusion or detriment of the other departments. It may even well be that the economic tendency will indicate the great desirability of the electric business going along on one line, and that the gas business, separately organized, will go along an entirely different line, both serving the people in their respective fields and assisting in developing industry to the utmost.

I am presenting this question, which is one requiring a great deal of thought, with the idea in mind that these things may some day be given study, not only by you men but perhaps by the industry generally, because there is no question in my mind that the lack of attention given by managements of combined properties to the gas department has in many instances heretofore resulted in a serious delay in the proper and logical development of the gas industry.

An Economic Fundamental

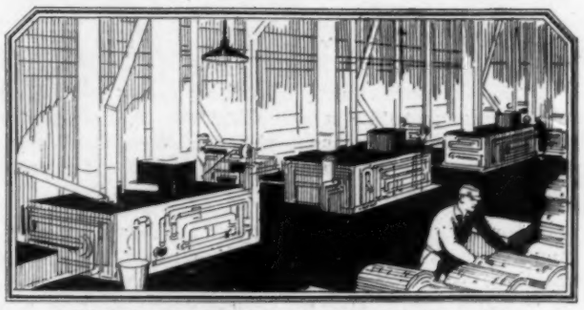
Let us take the question of heat and consider it. If it should ever come to pass that a form of energy is developed which will make the generation of electricity so cheap that a million B.t.u. in the form of electrical energy can be sold for heat purposes cheaper than a million B.t.u. in the form of gas, then people will use electricity for heat. At the present time, however, viewing the past developments of power generation in the light of present knowledge, there does not seem to be anything in sight which would bring such a condition to pass. Based on this fundamental, then, that heat can be purchased in a perfectly convenient and advantageous form in gas through a gas pipe much cheaper than it can be purchased at the present time in the form of electrical energy delivered over a copper wire, it appears that the gas industry, if handled by proper business methods, must succeed on a grand scale.

Vision

It may not be out of place to make a few general suggestions in closing. Learn to develop your character and your personality and your place in business along earnest, sound, and efficient lines. Work, in the first place, is the foundation upon which success is built. Learn to develop sales. Learn to develop vision also.

Most men starting in business are initially actuated by the principle of doing something for themselves —accumulating money for the care of their families and themselves in their old age, and, therefore,

If it's done with heat—
You can do it Better with GAS



The absolute dependability of gas as an industrial fuel has resulted in its use by great newspapers. Here may be seen gas-fired stereotype casting equipment where about 1,500 stereotype plates are cast every day.

Gas Service Never Fails!

Let the Gas Company holders be your fuel bins—let the Gas Company assume your fuel problems. You can always count on gas not only to furnish constant, controllable, clean heat in any quantities and instantly, but also to bring down production costs, increase efficiency, and insure accuracy and precision in your plant.

GAS—*the Economical Factory Fuel*

Phone ..... for an expert industrial engineer to call on you and talk over your fuel problems, tell you something about Gas as the most Economical Factory Fuel. No obligation to you.

(Your Name and Address Here)

A.G.A. 663

An Industrial Gas Ad Which Gives One Good Reason Why Gas is the Logical Fuel for Industry

initially the motive may be assumed to be selfish to a large extent.

However, ultimately there comes the broader view. No matter what position any one of us occupies in life, the work we do is really for the benefit of mankind as a whole. Some men conceive of the great things that may be done to benefit all people, more than other men. But all great men have made their developments and based their accomplishments on vision. I will not cite the names of individuals, but you know fully well that great accomplishments of men during all history have benefited mankind above all things, and the benefit to the individual himself has been entirely negligible beside the greater effect on all people.

I say, therefore, develop vision. It is my belief that all of you have great visions for the possibilities of the gas industry. I believe you see, as I think I do. that the day will come when gas will be so universally used that it will confer incalculable benefits on all mankind, from general heating of homes to the thousand and one other things that can be accomplished—the clearing of the atmosphere of our city from smoke and dirt, and the comfort and convenience and time saving to be effected by its use; and so, I say to the young men who are starting in this business and who wish to progress in it, that besides working specifically and accomplishing the daily duties well, it is advisable that vision be trained. Don't hesitate to dream a few dreams. The right kind of dreams will not interfere with your work. It will make you better men. And on this basis you will see a development of the gas industry, which, viewed from present accomplishments, will stagger the imagination.

Bringing Home the Bacon

Service salesman tells interestingly how this is done

B. C. Reber

SAN ANTONIO, Texas, is a city that is continually reaching out. In 1920 it had a population of approximately 166,000; now the number of its citizens totals nearly 200,000. And while the population has increased, new divisions have been opened up, new homes have been built, and new buildings erected.

Naturally, in the development of these improvements, comforts have followed closely the initial building. The American people have been educated to demand them, and no development of any size today is a successful one unless certain comforts such as water, gas, sewers, transportation and lights are already on the premises before it is offered for sale.

The San Antonio Public Service Company has a large force of employees who are engaged in helping San Antonio expand and prosper. In the gas service department there is one young man in particular who has created quite a record for selling service to the people. R. W. Murray is the man, and his story of how he sells the people on gas is an interesting one.

Sell Prospect on Value of Service

"I think one of the principal points in selling gas service," Mr. Murray explained, "is to sell the prospect on the value he is getting, and not stress how much it is going to cost him. At times I have met property owners who, when I suggested the installation of gas in some homes they owned would say, 'Yes, it's a good thing; but I don't want to put out any more on those houses just now.'

"Here is a typical example of where the prospect must be sold on the investment value of gas installation in order to get his consent. It is evident that he has bought those homes as an investment; or, in other words, to keep his money working for him. It is also evident that he will sell that property if he can make a good profit on it.

"Taking these things into consideration, I show him how, by having gas service in these gas homes he will greatly increase the value of the property. Naturally, he may think I am telling him that to get him to sign up; which I am. But I recommend him to call up any of the local realtors and ask their opinion, and this clinches my statement.

Coming Down to Hard Figures

"Having created his interest in this manner, I begin to show him in cold figures just how much he will gain by having service. In the first place it will increase the rental-value. In the second place, if he wishes to sell them, it will increase the property-value. In the third place he will be given a better fire insurance rate since the user of gas under proper

(Continued on page 686)

As The Journal Views It

THE GAS METER AND THE WINDOW DISPLAY

The Meriden, Conn., Gas Company recently built its window display around the gas meter. The interest that this novel exhibit created and the attention that it received from the citizens of that community indicated that such a display can well be used by other companies who want to make the most out of their display windows.

It must be remembered that the gas meter is, after all, a thing of mystery to the average gas customer who knows but little about it except that it is used to determine how much gas he uses and how much he has to pay for gas every month. He knows nothing of its workings or the accuracy with which it is made, and in fact is only concerned with it when he has a complaint to make to the gas company that his gas bills are too high.

To show the meter, in the gas company's display window, to exhibit its working parts, to teach the customer what it is and how it operates, should form therefore an essential part of the work of the gas company. A properly arranged meter display in the company's window cannot fail to attract attention, and when the meter is shown so that its entire construction is visible, and the manner in which it operates is made evident by actually working it, the display assumes a very important, educational character.

What the Meriden Company did, other companies can do. The window display, it should be remembered, can be used not only to show off appliances which the gas company sells, but also to educate the public on gas matters. And surely one of the most vital and important media employed in the gas company, that requires exposition and explanation, is the gas meter.

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CUTTING AND WELDING WITH GAS

Those who visited the Young's Million Dollar Pier at Atlantic City during the recent convention, saw an exhibit of cutting with the aid of city gas. This is a field which has not been developed very considerably up to the present time, but is one where good work can be done and where a substantial load can be obtained by the gas company.

Recent developments in the design and construction of a properly designed torch for cutting and welding with illuminating gas have been successful and have recently been described in this Journal. These developments show that the use of city gas for this purpose is economical and produces results that are conformable in every way with other welding and cutting processes. The gas industry should be deeply interested in this matter for it provides a use for gas and industrial appliances which can probably be applied in every town, no matter what its size, that has a machine shop or some kind of repair shop.

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TWO-STAGE CARBONIZATION

Those who attended the recent conference on Bituminous Coal at Carnegie Institute of Technology were amply repaid by hearing some of the world's greatest authorities on the utilization of soft coal tell of the most recent and most important developments in this field. We are happy to say that the part played by the gas industry at this meeting was an important one. And well it should have been, for is not the use of soft coal in gas making one of the principal applications of this product?

Much was said about soft coal as a raw material in the manufacture of synthetic petroleum and considerable attention was paid to low temperature carbonization. This process, or rather series of processes, for there are many, have not awakened anything other than theoretical, academic interest in the gas engineer. No practical applications have as yet been made of these processes in the real sense of the word and it is a matter of argument as to whether or not any will eventually be made.

The article in the November 27th issue of the American Gas Journal describing a new development in low temperature carbonization in the nature of a two-stage process is therefore of considerable interest. Not the least interesting feature is that it is an American development. It clearly indicates that there is still much attention being made to low temperature carbonization.

BRINGING HOME THE BACON

(Continued from page 684)

conditions is recognized as a safe and efficient manner of having heat and fuel.

"In the end it makes the proposition look pretty good to him, and he generally signs up without much trouble. He is making an investment of a few hundred dollars for which he will increase the value of his holdings several times that amount; and all within a very short period of time.

"The fact that nearly everyone actually wants gas service also helps in closing a sale. It would not do to tell a man that his houses were old wrecks because they did not have gas, but in a round-about way you can appeal to his pride and point out how much better the homes will be with gas.

Attending Community Meetings

"In addition to appealing direct to the property owners individually, I have another plan of working it which has proven successful. In one of our additions which was opened up a short time ago, the residents of that section held little weekly meetings at which topics of general interest to the community were brought up and discussed. There had been some dissension over a few points, so I considered it would not be best to work too promiscuously at first Instead, I attended one or two of the meetings without letting it be known that I worked for the local utility company and not mentioning gas service.

"A few days later, I dropped around to the homes of some of the people I had met at these meetings. When they came to the door and saw who it was they invariably said, 'Oh, yes. I saw you over to one of the meetings the other night.'

"This served as an introduction and made it easy to get their attention and properly explain my mission. I also found them more willing to listen to the points I brought up and in the end I had no trouble in signing them all up.

A Different Selling Proposition

"Selling gas is a lot different from selling other things. You can't hold your article up before the prospect and say, 'Isn't that a beautiful thing? Isn't that color wonderful?' Instead, you have to appeal to the home comforts, the conveniences, the time and labor saved, and the added value to the property.

"In our office we have a permanent display of gas and electrical fixtures. These are connected ready for demonstration at any time, and on certain occasions when the opportunity permitted, I have taken the prospect into the office and shown this display. I find that among housewives this is always a strong argument. If you can get the woman of the house to try it out, get her hands on the levers, and see for herself how clean, handy and comfortable it is, all further objections will be looked upon with scorn.

"It is also evident that people like comforts. They appreciate nice things and it is one of the ambitions of life to have these things. The housewife thinks of her home and is continually making plans for making it more attractive and comfortable. For this reason it is easier to get her interest by appealing to her from this angle. The easy and quick way in which breakfast may be served in the morning. Cleanliness. Continuous heat by turning a valve and striking a match.

Finding Points of Common Interest

"These things all help in selling the service. Each individual has some certain hobby in which he or she is keenly interested. I have found that by feeling around a bit when interviewing such a person, you can soon determine where their interest runs and then plan your sales talk accordingly. If, however, you can mention some point in which they are interested such as chickens, a home, a garden, etc., you will create their interest and attention with ease.

"One of the ideals in selling gas service is to have each neighborhood a hundred per cent consumption. This looks easy first, but it requires work the same as anything else. A new subdivision may be opened up, new homes constructed, and the service run. A few months later some additional homes are built, and you have to sell them in order to keep the service on top.

"In every city there are homes like this spotted about over the town which do not have gas. It is hard to bring all of these in since it often takes as much time and trouble as to write up a whole district. However, there are periods when you are not very busy that you can drop around and see one or two of these families and this helps to keep the neighborhood completely sold.

List of Prospects Kept for Reference

"I keep a list of such names for reference when the occasion arises. It may happen that I have an errand out in the particular section where the house is located and it takes only a few moments to drop in and feel out the situation. On many occasions it is possible to write the party up without any trouble. At other times it requires several calls and some real hard work. But consistent effort will eventually win the business, and that plugs up another spot which had been marked 'without service.'

"Selling gas service is in a way like selling other things. You have to measure your territory, seek new prospects, appeal to them, and get the business. Then you have to get out and create new business and develop new territories. The fact that the American Gas Association issued a booklet recently showing more than 800 uses for gas helps in this work for it makes it possible to mention many uses unknown to the average consumer. This, of course, not only makes it easier to close the sale but also increase the value and popularity of gas as the ideal fuel for comfort."

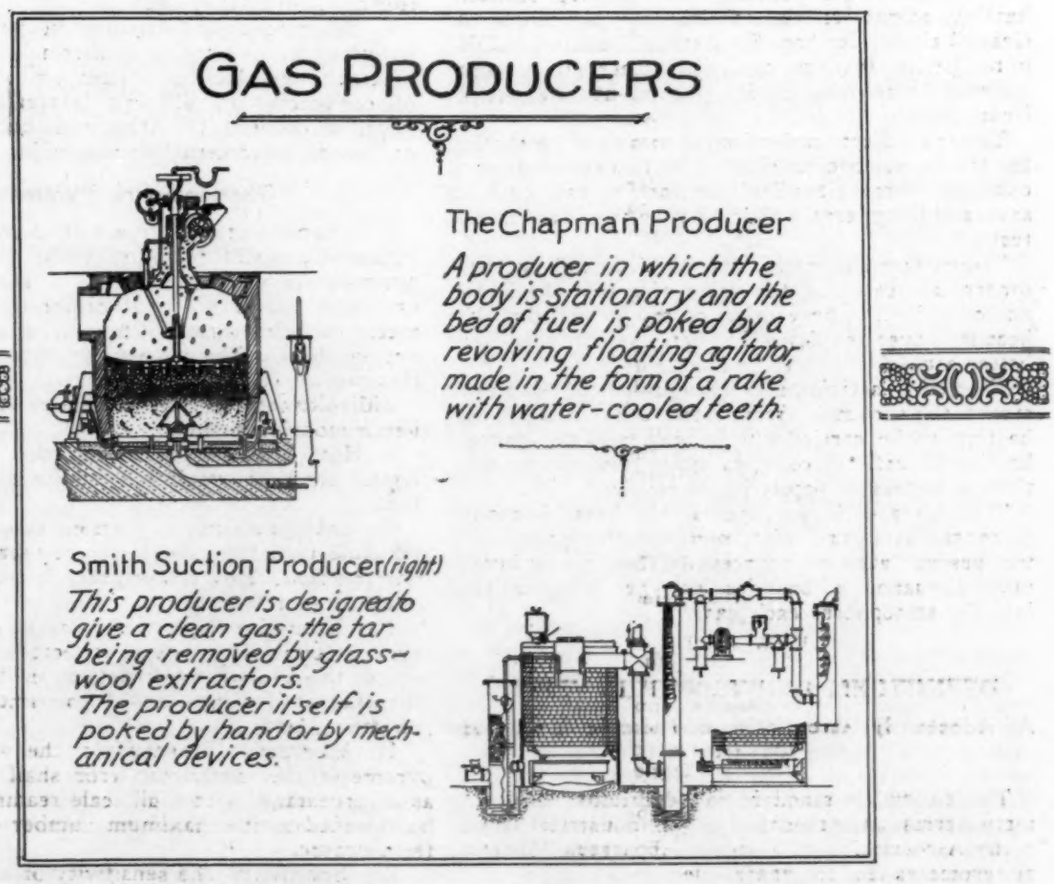
INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 147

Manufactured Gas

It is not desirable in here to go into great detail on the operation of the producer and on the thermal conditions that prevail in its operation. It should be understood that certain of the reactions that take place in the producer result in the consumption of heat. And naturally, there are other losses of heat that are incurred in the manufacture of the gas. Thus, there is always a certain amount of heat lost in radiation and there is also a definite proportion of potential heat value lost in the unburnt fuel that is contained in the ash and cinders.


GAS PRODUCERS
The Chapman Producer
A producer in which the body is stationary and the bed of fuel is poked by a revolving floating agitator, made in the form of a rake with water-cooled teeth.
Smith Suction Producer (right)
This producer is designed to give a clean gas; the tar being removed by glass-wool extractors. The producer itself is poked by hand or by mechanical devices.

Heat Lost and Potential Heat in Gas.

The relation between the heat developed in the producer gas operation and the heat that is there-

after obtained from the combustion of the gas itself, is easily understood from the following analysis:

If the total amount of heat emitted in the air-blown producer is figured as 349,200 B.t.u., which corresponds to the heat which is evolved from the complete combustion of the two molecules of carbon, then the distribution of this heat in the output will be as follows: The potential heat in the carbon monoxide is equal to 244,800 B.t.u. or 70.1 per cent of the total input. The sensible heat in the producer gas will be 65,700 B.t.u. or 18.8 of the total; the heat lost due to radiation, in fuel values in the cinders and other unaccounted for losses can then be found by difference to be equal to 38,700 B.t.u. or 11.1 per cent. This heat balance pertains only to an ideal air-blown producer gas, which is composed of 34.7 per cent carbon monoxide by volume and 65.3 per cent nitrogen by volume.

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WANTS GAS USED IN BRITAIN AS IN U. S.

The use of gas in American homes not only for cooking and water heating, but also for furnace heating, might well be emulated by the people of Great Britain, declares Sir Arthur Duckam, K.C.B., of the British Institute of Civil Engineers, in a recent address before the Smoke Abatement League of Great Britain.

The most direct and effective means of combating the smoke nuisance in cities is by the use of gas and coke, both smokeless fuels, instead of raw coal, he says, and the general public must be awakened to this truth.

"Town councils, architects, builders and property owners are realizing the value of gas in the house, not only for the prevention of smoke and dirt, but because houses so fitted find better tenants, and are better cared for.

"For the satisfactory elimination of domestic smoke, the economic arrangement is for cooking and heating to be carried out by gas, and the general heating of water by coke, gas being used when a continuous hot water supply is not required.

"The increase in gas used in the home is month by month having an effect upon our atmosphere. At the present rate of progress of the gas industry, many thousands of tons less soot are being emitted into the atmosphere each year."

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DEFINITIONS OF PYROMETRIC TERMS

As Adopted By Association of Scientific Apparatus Makers

The following standardized definitions of pyrometric terms, as presented by the Industrial Group of the Association of Scientific Apparatus Makers, are recommended for general use.

Each of the terms was defined only after wide discussion with the Bureau of Standards and other authorities, and the definitions combine the thought of a representative group of those best qualified on nomenclature in the pyrometer field.

Definitions

1. Thermometer: A device for measuring temperatures.

2. Pyrometer: A device for measuring high temperatures. The term is applied to those devices, the principal use of which is for measuring temperatures above a red heat (about 500 degrees C.).

3. Resistance Thermometer: A thermometer which indicates temperatures by means of the change with temperature of electrical resistance of one of its parts. It is a pyrometer when used at high temperatures (above 500 degrees C.), and in such case is preferably called resistance pyrometer.

4. Radiation Pyrometer: A pyrometer which indicates temperature by means of the change with temperature of the heat radiated by a hot body. As nearly as possible the total heat radiated is used. Usually this temperature is measured by a thermocouple.

5. Optical Pyrometer: A pyrometer which indicates temperature by means of the change with temperature of the light emitted by a hot body. As nearly as possible light of a single color (wave length) is ordinarily used.

6. Thermocouple: A pair of electrical conductors so joined as to produce a thermal e.m.f. when the junctions are at different temperatures. It consists of conductors of different material permanently joined at one end, the other ends being free to connect to an instrument for measuring e.m.f.

Thermoelectric Pyrometer

7. Thermoelectric Pyrometer: A pyrometer which indicates temperature by means of the change with temperature of the e.m.f. of a thermocouple. It ordinarily consists of a thermocouple, a millivoltmeter (or other means of measuring e.m.f.) and connecting leads. The measuring instruments may be classified as follows:

Millivoltmeters, Potentiometers, their combination or modifications.

8. Hot Junction: That junction of a thermocouple which is subjected to the higher temperature.

9. Cold Junction: A junction of a thermocouple which is subjected to a lower temperature than the hot junction. This temperature is usually the temperature of reference.

10. Extension Leads: A pair of lead wires of such material that when connected to a thermocouple the effective cold junction will be removed to the other end of the leads. Sometimes called compensating leads.

11. Accuracy: In specifying the accuracy of a pyrometer the maximum error shall be expressed as a percentage of the full scale reading; or it may be specified as the maximum number of degrees of temperature.

12. Sensitivity: The sensitivity of a pyrometer is its susceptibility to small changes of the temperature being measured. Specifically, it is defined as the smallest change in temperature which will cause a variation of one millimeter in the reading of the pyrometer.

DISH WIPING HUSBANDS

MRS. CECIL G. HARVEY'S "Dish-wiping Husbands" statement that appeared in the Atlantic City papers a few weeks ago has caused some unusual comment.

"The happiest homes in America are manned by the husbands who occasionally wipe dishes," said Mrs. Harvey, Home Service Director of the Westchester Lighting Company, Yonkers, N. Y., in an address before the American Gas Association.

"I make this statement in refutation of the accusation that dish-wiping now and then tends to degrade or cultivates an inferiority complex in married men," she explained. "The most companionable and efficiently-equipped homes in the land have been made so by men who know home-living conditions by personal experience, and who insist that their homes be as efficiently operated as their offices."

Among the letters she received from many cities in the States the one below seems to back up her statement whole-heartedly.

A Commendatory Letter

Mrs. C. C. Harvey,
Yonkers, N. Y.
Dear Madam:

After reading the enclosed article taken from our Detroit News of even date I cannot but make some comment.

I heartily agree with you in every way and believe that any man that cannot take part in some of the many household duties that go to make home a comfort there must be something wrong in his make-up. Personally, I enjoy washing and drying the dishes, run the sweeper, dusting, and many other things around the home. We have three boys who now have homes of their own; they, too, dig in and help. We have been married forty-four years—am alive to tell how we all enjoy home. As far as we boys can see we are none the worse for wear. Then, again, Mother can go off for a visit anytime if she so desires and we get along fine, yet sure glad when she returns.

(Signed)
R. A. Baskerville, Detroit, Mich.

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HOME SERVICE AT BETTER HOMES EXPOSITION

HOME SERVICE was represented in the Better Homes Exposition which was sponsored by Miss Harriet Vittum of the Northwestern University Settlement and other settlement houses throughout the city of Chicago. It was planned particularly to demonstrate the possibilities of better homes for the family of small and moderate income.

On Friday evening, Mrs. Peterson, director, Home Service Department, Peoples Gas Light and Coke Compay, Chicago, spoke to about 150 women from the Mother's Clubs in the settlements. "It was interesting to me," said Mrs. Peterson, "to see how many hundreds of women and young women came to this exhibit, and looked everything over with keen interest. More than that, it had been announced in the schools that the children should attend, and countless classes of children came with the teachers in charge."

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PROVIDENCE HOME SERVICE ADDRESS ON MARKETING

DO you do your marketing wisely? Do you always remember those few, but entirely worth-while, rules?

First, do you "Buy in Season?" Foods are, of course, much cheaper. They are fresher, too. More important still, their flavor is far superior to that of the forced out-of-season product. If you buy things out of season you are destined to be disappointed, because they do not taste as you expect. The keenness of your appetite is dulled when the food does come into the market, ripe, juicy, perfect. So know the seasons and buy in season!

In buying fruit and vegetables, to select the medium sizes is usually the best judgment. If they are very large they are likely to have less flavor, less juice, and to be coarser in texture, whereas small fruits and vegetables are often underdeveloped in flavor, and certainly they take more time for preparation.

Of course, you know that muskmelons when ripe are quite soft in the ends, and that the more netted the rind, the better the flavor. You know also that if the citrus fruits (lemons, oranges, grapefruit) are heavy for their size they will be full of juice.

Don't forget that it is the old rule of "Supply and Demand," not the food value of the product which regulates its price. Twenty cents spent for prunes will give your family a great deal more nourishment than a dollar spent for melons. Because your grocery bill is high, it is not significant that your family is properly nourished.

Avoid Bargains

Do not be influenced to buy unwise, so-called bargains. Foods are reduced in price either because of

an over-supply, or because the market dare not risk further depreciation. If the reduction is made for the former reason you are quite safe, no doubt fortunate, but if it is done for the latter cause you are likely to waste enough to make your "bargain" prices dear.

Do you telephone your orders? It is convenient, isn't it? If this is your custom, choose a reliable firm and try to confine your ordering to staples only. Learn the brand names for commodities which give you satisfaction, and order by that name, and learn, too, the efficient amount of things to purchase at a time. Be alert and thrifty about this. Very often seeing your future as well as your present need saves money and time. But do make a tremendous effort to select your perishable foods yourself. You will get better quality, better selections, better price, and the exact knowledge of what you are getting. The most trusted grocer will fail you at some most important time if you leave to him the selection of your perishables. Then, too, don't you always get suggestions at the market? You had forgotten all about this cut of meat, or this unusual vegetable, or you did not realize it was time for that fruit. And there you have it—a change for the family and for yourself, too.

One last word of advice. Make a friend in your favorite and reliable grocery store. Do your buying from him. He will help you more than countless rules because that is his business—he excels at it—but you have scores and scores of other duties beside marketing in which you must be equally proficient. —(Providence Gas Company Home Service Bulletin.)

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RADIO TABLE TALK GETS RESPONSE

EVERY morning as Ruth Yoe, of Home Service Department, Peoples Gas Light and Coke Company, Chicago, finishes her table talk over WBCN she broadcasts her willingness to answer any questions over the phone, giving the station telephone number. On one day she had the interesting experience of answering seventen calls before she left the studio. She has brought these calls up from three to seventeen. The telephone operator commented on the fact that one day every light on her fourteen-plug switchboard was a call for Miss Yoe.

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"BETTER MEALS MAKE HAPPIER HOMES"

IT is less than two years since the Home Service Bureau of the Cohoes Power and Light Corporation, Cohoes, N. Y., was organized. In this comparatively short time we have succeeded in establishing one of the most successful departments in New York State.

The department is now conducting two cooking classes each week. The "Housewives' Cooking Class" is held each Thursday afternoon, with an average atendance of 130 women. Demonstrations and lectures are given on balanced menus, meal planning and general household information. This demonstration is repeated on Tuesday evening for the "Business Girls' Cooking Class." This class is made up of young business women between sixteen and twenty-five years of age. We believe this work to be of great value, as these girls are the future housewives of the community. The attendance at this class has been most gratifying, averaging about 150 girls weekly.

Every week the department distributes over five hundred printed recipe sheets. We also answer many special requests for party menus and recipes. Beginning with November the department sent an illustrated colored recipe card with each gas bill. These will be sent each month for one year.

Christmas Sewing Class Recently Organized

Under the supervision of Miss Elizabeth Farrell, B.S., the new assistant director of the department, a

Part of the Home Service Department, Cohoes Power and Light Corp.

Christmas sewing class was organized. This meets weekly with an attendance of sixty. The women have covered pillows, made hemstitched towels and other articles suitable for Christmas gifts. This class may lead to other classes in sewing and dressmaking after the holidays.

This department aims to interest the women of Cohoes in their own homes. We strive to teach that cooking, meal planning and general household management, if correctly understood, are both pleasurable and interesting occupations. Better cooked meals insures happiness in the homes, and this is what we aim for. (Contributed by Miss Florence White Davis, B.S., director, Home Service Bureau, Cohoes Power and Light Corporation, Cohoes, N. Y.)

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EVENING HOME SERVICE

MISS McELLIGOTT, of Home Service Department, Peoples Gas Light and Coke Company, Chicago, tells that one of her night operators is eligible for a position in Home Service. About nine o'clock one evening a young boy's voice asked for Mrs. Peterson. When told that she was not in the office at that hour, the boy said: "Well, I am all alone in the house with a barrel of flour and a bottle of sour milk. How can I make some pancakes?" The operator gave him our recipe and said if he followed it he would certainly make some good pancakes.

SMELTING BY GAS PROVES ANSWER TO HARD PROBLEM FOR MINING ENGINEERS

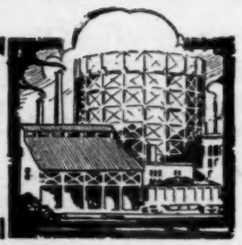
The use of gas to cook ore has solved a difficult mining problem, according to engineers, says the New Jersey Public Utility Information Committee. This is a new application of that fuel to industry.

A rich body of zinc ore, recently uncovered in Oklahoma, was found to have a high content of asphalt oil, which made it difficult and expensive to smelt. Oil-fired kilns did not free the ore of its gummy deposit and it was decided to try gas.

A main was built to the mine by the local utility company and two rotary kilns were equipped with gas burners. Treatment in the gas-fired kilns not only left the ore entirely free of asphalt oil, which was cooked away, but a material increase in ore tonnage through the kilns was recorded.

Many Interesting Gas Displays Were Shown at a Recent Gas Exhibition in London

NEWS OF THE GAS INDUSTRY



Pennsylvania Gas Men Hold Mid-Year Meeting

Listen to Interesting Papers and Hold Round Table Discussions

The mid-year meeting of the Pennsylvania Gas Association was held Monday, December 6, 1926, in the Hotel Valley Forge, Norristown, Pa. The meeting was distinguished by the interesting papers presented and the round table discussions which took place in the afternoon.

The meeting was opened by the president of the association, Allyn C. Taylor, who introduced Herbert H. Ganser, who welcomed the gas men to Norristown for the first time in the history of the Pennsylvania Gas Association. Mr. Ganser spoke interestingly of Norristown, its associations and history.

The business part of the meeting commenced with the report of the secretary, George L. Cullen, on new membership to the association. Thirty-four active members and four associate members were elected. L. R. Dutton was then nominated for honorary membership and unanimously elected.

W. Griffin Gribbel was called upon to report on the work of the Committee on Co-operation with Educational Institutions in the State of Pennsylvania. He mentioned the enterprise of the U. G. I. Contracting Company in providing for the transportation of the carburetted water gas model exhibited at the Atlantic City convention, around to various universities, such as Harvard, Yale, Brown, etc. Mr. Gribbel told of the aims of his committee in telling the students of various educational institutions of the real character of the gas industry, so that even if they do not enter the industry they at least know the truth about the industry.

Mr. Gribbel thereafter read a resolution in eulogy of Lucius A. Bigelow, publisher of "The Gas Industry," Buffalo, who recently passed away. The resolution was adopted. A similar resolution was passed on the death of H. T. Carkeek. These resolutions follow:

Resolutions on Lucius S. Bigelow and Harvey T. Carkeek

Whereas, The Pennsylvania Gas Association in sorrow at the passing of Lucius S. Bigelow, a member of this association, and one who at all times was an interested and enthusiastic supporter of its work, and whereas Lucius S. Bigelow was also the founder of organized effort and work in the commercial field of the gas industry's activity, ever ready through personal work and the columns of his publication to further the interests of gas; therefore,

Be It Resolved, by the Pennsylvania Gas Association in general meeting at Norristown, Pa., December sixth, that a page in the minutes of the association be set aside for the recording of this resolution in appreciation of Mr. Bigelow's worth and as a tribute to his memory, and be it further

Resolved, That a copy of this resolution and the sympathy of the association be sent to his bereaved family.

Whereas, The Pennsylvania Gas Association has learned with deep regret of the death of Harvey T. Carkeek, who in the years of his association membership, carried himself in his personal and business relationship in such a manner as to command the deep regard and highest respect of his fellow members; therefore, be it

Resolved, That a page in the minutes of the Pennsylvania Gas Association be set aside for the recording of this resolution and as a mark of respect to the memory of Mr. Carkeek, and be it further

Resolved, That a copy of this resolution and the condolence of the Pennsylvania Gas Association be sent to his family.

Budgetary Control

The first paper read at the meeting was on "Budgetary Control and Why." This was prepared by Harold J. La Wall, statistician of The United Gas Improvement Company, Philadelphia, Pa. Mr. La Wall's paper told about the system used by the U. G. I. Company in preparing a budget. This system is particularly characterized in being simple and flexible. The budget is logically divided into four distinct parts, viz., sales and revenue, construction, operating, and cash.

Mr. La Wall discussed each individual part, giving the essential details and describing briefly the manner in which the budget was prepared. A portion of his paper was also occupied with a brief discussion of forms used and attention was also paid to budget control. The paper was very well received and quite thoroughly discussed.

Motor Transportation Problems

The next paper was delivered by J. G. Moxey, of the Atlantic Refining Company, Philadelphia, on "Motor Transportation Problems." Mr. Moxey spoke interestingly on the operation and maintenance of commercial and passenger vehicles. This paper also was very well discussed.

Luncheon in the Hotel

The gas men then adjourned for a luncheon which was held in Hotel Valley Forge through the courtesy of the Counties Gas and Electric Company, Schuylkill Division. A. Gordon King addressed the gas men after the luncheon, telling them of some of the workings of the American Gas Association.

In the afternoon the gas men held two round table discussions,

one on service to customers and the other on fuel handling at the works.

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Peoples Light & Power Corp. Abuts New Properties

Minneapolis, Minn.—W. B. Foshay, a national investment house in Minneapolis, has announced that it has purchased for Peoples Light & Power Corporation which it controls and manages, gas properties of Munroe Light & Fuel Company of Munroe, Wisconsin, and the New Richmond Power Company, New Richmond, Wis. Both properties will be consolidated with the present subsidiary, Peoples Wisconsin Hydro-electric Corporation. The properties of the Peoples Light & Power Company are estimated to be worth $18,000,000, yearly gross earnings above $2,500,000.

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North Pacific Public Service Co. Sold

Tacoma, Wash.—Sale of the North Pacific Public Service Company to the Washington Gas and Electric Company, a new corporation, has been announced by W. W. Seymour, who, with his brother, Edmund Seymour, and F. C. Brewer, have had a dominant interest in the North Pacific Company.

The North Pacific Company had franchises for supplying gas in Chehalis, Centralia, Aberdeen and Toquiam, with gas manufacturing, storage and distributing systems in each. The company recently completed a new plant in the north end of Chehalis and extended a new pipe line to Centralia.

Gas Used for Industrial Purposes Over Century

New Orleans, La.—"The use of gas in industrial heating has been practiced for more than a century, according to data gathered by research engineers of the American Gas Association," Mr. A. E. Merchant, head of the gas department of the Public Service, stated recently.

"As far back as 1806, Josiah Pemberton constructed a gas stove, which he used for soldering purposes in his button factory," Mr. Merchant said. "Thirty-four years later, according to the records, a Scottish manufacturer, by the name of McIntosh, made several tons of what was known then as 'cemented steel,' by submitting iron at a dull red heat to the action of illuminating gas, the carbon for the steel was derived, of course, from the gas.

"Gas has become the almost universal fuel for all sorts of industrial heating, because it is more efficient, furnishing at all times an even flame at any desired heat and requires no storage facilities, and also does away with the necessity of removing ashes and other residue. However, it was in 1857 that the first use was made of gas in the heating of irons for laundry work, and it was two years later that an apparatus for continuous soldering was invented. This included the use of a blast by a foot bellows.

"Although it is only in recent years that gas has come into its own as an industrial fuel, however, back in 1859 a manufacturer by the name of Elsher advertised in Berlin that there was scarcely a kind of domestic work, industry or business for which a gas cooking or heating apparatus could not be recommended."

The Public Service Company employs industrial gas heating experts, according to Mr. Merchant, who will study the needs of any local concern contemplating changing from some other fuel to the use of gas.

* * *

Public Service Co. Presents New Schedule in New Jersey

New York City.—The Public Service Electric and Gas Company announced recently that a schedule of lower rates for gas used in house heating had been filed with the Public Utility Commission of New Jersey.

Devised to stimulate the use of gas in house heating, the new rate provides for a demand charge and a commodity charge. The demand charge is effective from October 1 to April 30. It provides for seven monthly payments of 30 cents each per square foot of installed radiation in steam-heating systems, of 18¾ cents per square foot in hot-water heating systems and 18¾ cents per square foot of basement pipe area in hot-air systems.

The commodity rate is 80 cents per 1,000 cubic feet, which compares with present rates of $1.20 per 1,000 cubic feet for the first 20,000 cubic feet; $1.15 for the next 30,000, $1.10 for the next 50,000, $1.05 for the next 50,000, $1 for the next 50,000, 95 cents for the next 100,000, 90 cents for the next 500,000 and 85 cents for over 800,000 cubic feet.

The new rate becomes effective with bills rendered January 1. The company also filed an amendment providing a minimum monthly charge of $1 per meter.

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TO REDUCE GAS COMPANIES

General Corporation to Be Cut From 44 to 25 Units

New York, N. Y.—The number of corporations in the General Gas and Electric Corporation will be reduced from forty-four to twenty-five by April 1, according to W. S. Barstow, president. He said:

"In recent years we have been eliminating superfluous operation companies by transferring their assets to other appropriate companies. Within the past few weeks, two small companies in New Jersey have been merged with the New Jersey Power and Light Company. In Pennsylvania, the York Haven Water and Power Company was merged into the Metropolitan Edison Company. We plan a similar procedure with the Metropolitan Power Company. However, there are instances where State lines make impossible the merger of adjoining properties, this being the case with our Pennsylvania-New Jersey system.

"By April the value of subsidiaries owned directly will represent 85 per cent of the total value of all subsidiaries."

J. R. McGinley Gas Pioneer Dies

John R. McGinley, aged 75, of Pittsburgh, a pioneer in the natural gas industry in western Pennsylvania and an organizer of the Philadelphia Co., of which he was vice-president and general manager for many years, died this week in New York, after an illness of several months.

Mr. McGinley, who was a prominent figure in the business world of Pittsburgh for many years, was an associate for George Westinghouse, with whom he formed the Westinghouse Electric & Manufacturing Co. and Westinghouse Airbrake Co.

He is survived by his widow, Mrs. Jennie Atterbury McGinley; one son, Thomas A. McGinley of Pittsburgh; four daughters, Mrs. Lois Miller of Sewickley, Mrs. Jean Moore and Mrs. Marion Mackie of New York, and Mrs. Stackpole of Boston, Mass.

* * *

Operating Division N. E. Gas Association to Meet

Boston, Mass.—The next meeting of our division will be held at Manchester, N. H., Hotel Carpenter, on Friday and Saturday, December 17-18, 1926.

The first meeting will be a discussion of Works' Problems following the presentation of a paper describing the Manchester Works by Mr. C. P. Warner of the Manchester Gas Company.

Saturday morning the session will be called to order at 10:00 a.m., for the consideration of a paper on House Heating by Mr. A. J. Smith of Concord, N. H., and a discussion of Distribution Problems led by Mr. W. T. Jebb of the Manchester Gas Company.

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J. S. Rider Made Manager of Florence Gas & Fuel Co.

New York City.—J. S. Rider, formerly southern sales representative of the Humphrey Water Heater Co., has accepted the position as manager of the Florence Gas & Fuel Co., Florence, S. C. Mr. Rider for several years was associated with the Lynchburg Traction & Light Co., Lynchburg, Va., and for five years was manager of the Tri City Gas Co., Gadsden, Ala. Mr. Rider assumed his position with the Florence Company on September 15.

A. G. A. Laboratory Issues Approval List on Tubing, Space Heaters and Ranges

Cleveland, O.—The American Gas Association testing laboratory has announced 14 types of flexible gas tubing, 44 space heaters and 1731 ranges approved as of November 15, 1926.

List of approved space heaters:

American Gas Products Corp., New York City, Wolff Gas Radiator.

American Stove Co., Reliable Stove Co. Division, Cleveland, O., Golden Glow.

Clow, James B. & Sons, Chicago, Ill., Clow Gas Steam Radiator.

General Gas Light Co., Kalamazoo, Mich., Radiantfire.

Grayson Mfg. Co., Athens, O., Ray Glo.

Reznor Mfg. Co., Mercer, Pa., Reznor.

Welsbach Co., Gloucester, N. J., Welsbach.

List of approved types of flexible gas tubing:

Atlantic Tubing Company, Providence, R. I., ⅜-in. Gaspruf Stove Tubing with Eureka Ferrules, 5/16-in. "W" Gas Tubing with Eureka Ferrules, 5/16-in. Gaspruf Stove Tubing with Eureka Ferrules.

Chicago Tubing & Braiding Co., Chicago, Ill., 5/16-in. Kantleke Flexible Tubing with Aluminum Ferrules crimped on.

Eastman Mfg. Company, Manitowac, Wis., 5/16-in. Evertite Flexible Gas Tubing with Aluminum Ferrules crimped on.

Excello Mfg. Company, Inc., 5/16-in. Excello Flexible Gas Tubing with Aluminum Ferrules crimped on.

Federal Tubing Company, Phila., Pa., 5/16-in. Indestructo Flexible Gas Tubing with Aluminum Ferrules crimped on.

New York Gas Tubing Co., New York, N. Y., 5/16-in. No. 323 Sta-tite Gas Tubing with Shrader Ferrules, 5/16-in. No. 324 Sta-tite Gas Tubing with Shrader Ferrules, 5/16-in. No. 325 Sta-tite Gas Tubing with Shrader Ferrules.

Penn. Flexible Metallic Tubing Co., Phila., Pa., 5/16-in. Penflex Metal Hose with Aluminum Ferrules crimped on.

Titeflex Metal Hose Co., Newark, N. J., 5/32-in. Titeflex Flexible Gas Tubing with Shrader Ferrules, 5/16-in. Titeflex Flexible Gas Tubing with Shrader Ferrules, ¼-in. Titeflex Tubing with Shrader Ferrules.

List of gas ranges:

Abendroth Brothers, Portchester, N. Y., York.

A-B Stove Company, Battle Creek, Mich., A-B.

Abram Cox Stove Co., Phila., Pa., Fortune.

Alcazar Range & Heater Co., Milwaukee, Wis., Alcazar.

American Range Corporation, Shakopee, Minn., Sanico.

American Stove Company Divisions, Clark & Co., Div., Geo. M., Chicago, Ill., Clark Jewel.

Dangler Stove Co. Div., Cleveland, O., Dangler.

Direct Action Div., Lorrain, O., Direct Action.

New Process Stove Co. Div., Cleveland, O., New Process.

Quick Meal Co. Div., St. Louis, Mo., Quick Meal.

Reliable Stove Co. Div., Cleveland, O., Reliable.

Beckwith Co., The, Dowagiac, Mich., Round Oak.

Chambers Mfg. Co., Shelbyville, Ind., Chambers.

Cribben & Sexton Co., Chicago, Ill., Universal.

Crown Stove Works, Chicago, Ill., Crown.

Detroit Stove Works, Detroit, Mich., Detroit Jewel.

Detroit Vapor Stove Co., Detroit, Mich., White Star.

Eriez Stove & Mfg. Co., Erie, Pa., Eriez.

Estate Stove Co., Hamilton, O., Estate.

Floyd-Wells Co., The, Royersford, Pa., Bengal.

Glenwood Range Co., Taunton, Mass., Glenwood.

Leonard & Baker Stove Co., Fairmount.

Magee Furnace Company, Boston, Mass., Magee.

Michigan Stove Co., Detroit, Mich., Garland.

Moore Bros. Co., Joliet, Ill., Moore's.

Ohio State Stove & Mfg. Co., Steubenville, O., Kab.

Roberts & Mander Stove Co., Phila., Pa., Quality.

Roper Corporation, Geo. D., Rockford, Ill., Roper.

Sexton Stove & Mfg. Corp., S. B., Baltimore, Md., Sexton.

Slattery & Bro., Inc., J. B., Brooklyn, N. Y., Economic.

Somerville Stove Works, Somerville, N. J., Service.

Standard Gas Equipment Corporation, Acorn Div., Aurora, Ill., Acorn.

Oriole Div., Baltimore, Md., Oriole.

Triplex Div., New York City, Triplex.

Vulcan Div., New York City, Vulcan Smoothtop.

Tappan Stove Company, Mansfield, O., Tappan.

Tinnerman Stove & Range Co., Cleveland, O., Tinnerman.

Walker & Pratt Mfg. Co., Boston, Mass., Crawford.

Wehrle Co., The, Elite.

Weiskittel & Son, A., Fire King.

Wincroft Stove Works, Middletown, Pa., Wincroft.

* * *

A. W. Thompson Elected to Board, Public Service Corp. of N. J.

Orange, N. J.—Arthur W. Thompson, president of the United Gas Improvement Company of Philadelphia, has been elected director of the Public Service Corporation of New Jersey, to succeed Dr. Walton Clark, who resigned. Mr. Thompson has also succeeded Dr. Clark as director of the corporation's subsidiary companies.

Mr. Thompson, generally recognized as one of the leading public utility executives in the United States, was president of the Philadelphia Company and its subsidiaries previous to his elevation to the presidency last July. As head of the Philadelphia Company he directed the operation of the gas, electric and transportation utilities of Pittsburgh, including the Duquesne Light Company.

* * *

Contracts Awarded

The Gas Machinery Company of Cleveland, Ohio, has been awarded contract to furnish a five foot carburetted water gas set, which will be installed in the gas works at Girardeau, Mo.

This new water gas set will be located in one end of the old retort house, and provision will be made for the installation of a future duplicate set.

The new water gas equipment will be complete with reversing valves, operating platform, air and steam meters, safety explosion blast check valve and other auxiliary parts.

* * *

G. D. Clinton Joins Peerless Heater Co. Staff

Pittsburgh, Pa.—George D. Clinton, who for some years has represented the Cribbin & Sexton Company and is well known to the gas fraternity in the middle west, has severed his connection with that company and on the first of December took charge of the Chicago office of the gas boiler department of the Peerless Heater Company.

Mr. Clinton has had a long experience in the merchandizing and servicing of both gas appliances and heating systems.

* * *

Wickes Boiler Makes Organization Changes

Saginaw, Mich.—The Wickes Boiler Co. announce the following changes in its organization. Henry E. Aldrich has been appointed general manager with headquarters at Saginaw, Mich., and J. Robert Fortune has been appointed general sales manager with headquarters at General Motors Building, Detroit, Michigan. The Detroit district sales office will also move to General Motors Building January 1, 1927.

* * *

Ohio Gas Light & Coke Co. to Issue Bonds

Cincinnati, O.—The Ohio Gas & Coke Company has petitioned the State Public Utilities Commission for authority to issue $650,000 in bonds. The funds realized from the bond issue will be used to carry out a plan for refinancing and to acquire additional properties.

Of the proposed issue $367,000 is to be used for the redemption of outstanding bonds at $105,; $36,000 to purchase certain properties now owned by the East Ohio Gas Company; $80,000 to purchase the Killbuck and Millsburg Gas and Oil Company; $75,000 to retire outstanding short term notes and $26,500 to extend a distribution system at Swanton.

Gas Co. Applies for Permit to Build Plant

Albany, N. Y.—The Endicott Union Gas Company recently filed a petition with the Public Service Commission for a certificate of permission and approval, or a renewal of the permission and approval, heretofore granted "to begin the construction of a gas plant for the manufacture of gas and to lay and maintain the necessary mains, etc., through the village streets of the village of Endicott," and for the approval of the exercise of a franchise granted therefor by the village on March 16, 1911.

This company was organized in March, 1911, by George E. Green, George C. Gochnauer, Guy E. Davies, Harry Harkness and Charles F. Wright, for the purpose of furnishing gas and electricity in Endicott and Union and the towns of Vestal and Union. Franchises were obtained from the villages and towns and on March 16, 1911, the Public Service, Second District, granted permission to begin construction in Endicott, and on July 26, 1911, permission was given to issue capital stock and bonds for such construction. On July 8, 1912, the commission granted permission to construct a gas plant in the village of Union, and on July 29, 1912, revoked its order of July 26, 1911, and issued a new order authorizing the issuance of stocks and bonds for the construction of a plant in Endicott and Union. No proceedings have been undertaken under the former order.

The matter has been in abeyance since that time, the petition alleges, because of the death of Mr. Green and Mr. Wright, the World War and other causes, until October 30, 1926, when the present owners of the company acquired the rights and interest of the surviving members of the corporation.

Endicott and Union are now consolidated into one village with a population of about 18,000. There is no plant in Endicott.

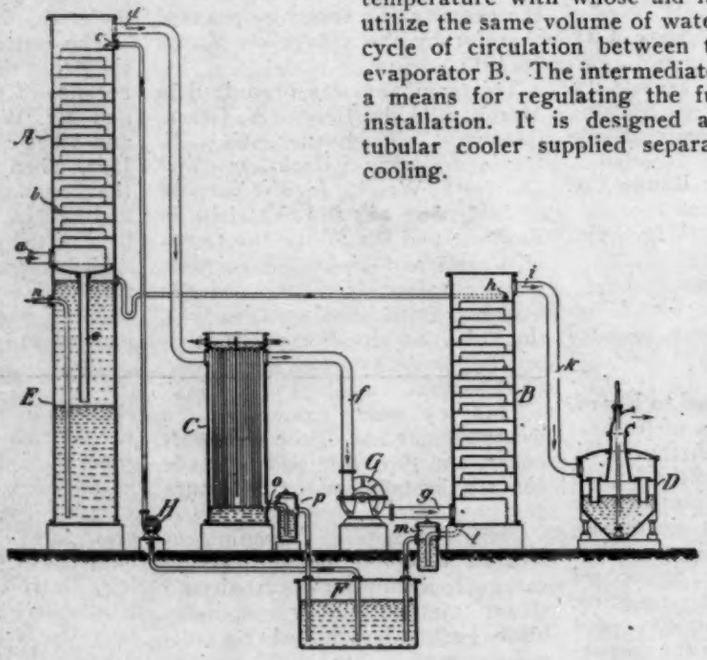
The Still Process---Details of the Apparatus

THE attached drawing represents the apparatus by means of which the still process for the recovery of tar and ammonia in marketable form without intermediate manipulation is carried out as follows:

The hot gas coming directly from the coke ovens enters, under action of gas suction pump G, at a into condenser A, and flows against the precipitating water for direct cooling.

The water is elevated by pump H from tank F to the top of condenser A and injected into it through sprinkler C, and by means of a number of drips is brought into close contact with the gas.

During this process the temperature of the water rises to nearly the temperature of the inflowing gas, while the latter leaves the apparatus at d at a temperature only slightly higher than that of the injected water.



As a result of the intensive cooling of the gas the entire tar contained therein is expulsed, during which process the separation of the smaller particles of tar is materially accelerated by the scrubbing effect of the injected water.

The condensates are discharged together with the highly heated injected water through tube e into tank E. Here the heavy tar separates from the lighter water and sinks to the bottom of the tank, while the water under the impulse of a natural drop descends on distributors h in evaporator B which serves as a re-heater, which the tar collected in the bottom of tank E may be directly transferred by the pressure in the tank to an elevated storage tank through pipeline n.

The gas leaving condenser A at d, passing through connecting pipe line f, after having been subjected to further cooling in an intermediate cooler C inserted therein, whose purpose and function will be further described below, comes in contact with the water heated in the previous process of cooling the gas in condenser A in much the same manner as before.

The heated gas leaves the evaporator B at i and is conducted through pipe line K into absorber D, designed for the direct separation of ammonia, and in which all ammonia is recovered directly in form of crystallized salt.

The cooled water, used in B for the purpose of heating the gas, flows through l into basin m, and from there into the collecting tank F. From here it is lifted again by means of pump H, to sprinklers C in condenser A for cooling the hot primary gases.

The intermediate cooler C, inserted between condenser A and evaporator B, serves the purpose, on the one hand, through an additional cooling of the gas, to insure, even under changing operative conditions, a certain fixed temperature of the cooled gas most suitable for the separation of the tar, and, on the other hand, to produce a certain lowering of temperature with whose aid it is alone possible to utilize the same volume of water in an uninterrupted cycle of circulation between the condenser A and evaporator B. The intermediate cooler C is therefore a means for regulating the function of the whole installation. It is designed as an indirect acting tubular cooler supplied separately with water for cooling.

During the operation small additional quantities of condensed water separate from the gas in the cooler C which flows through o into basin p, and may be discharged from there into collecting tank F.

As shown in the drawing, the whole process proceeds under the action of one suction pump for the gas, and of one water pump for lifting the circulating water to the top of the condenser.

And also the tar, which in composition and quality is equal to the tar recovered in the usual process of cooling, does not require the aid of a pump for transfer to the elevated tank.

The intensive process of cooling furthermore assures the complete separation of naphthalene, so that difficulties resulting from clogging of pipes with naphthalene are excluded.

As a result of the complete extraction of all particles of tar it is possible to obtain, during the process of saturation, ammonia of the purest quality that meets the most exacting requirements.

This process, which has been installed in a number of by-product coking plants, both small and large, has given excellent results over a period of several years, and may be considered a valuable innovation in the field of the by-product coking industry. (Adv.)